REMARKS

Given the requirement that polyethylene oxide comprises from 60 to 85% by weight of the formula I block copolymer, claim 1 has been amended to delete the reference to the n/m ratio. It is respectfully submitted that this amendment moots the 35 U.S.C. §112 rejection applied thereto. The requirement of claim 2 having previously been incorporated into claim 1, claim 2 has been cancelled without prejudice. Claim 1 has been further amended to specify that the silicone conditioning oil is present in the composition in amount of from 0.3% to 5% by weight and to specify that the hair conditioning composition is a shampoo composition. See, for example, page 7, lines 23 to 26 and page 1, lines 5 to 15. Claim 8 has been amended to specify that silicone conditioning oil is present in the composition in an amount of 0.5 to 3% by weight. See page 7, lines 23 to 26. Entry of the subject amendments is respectfully requested.

Pursuant to the Office Action of June, 9, 2009, claims 1-8, 11 and10-11, 13 and 15 were rejected under 35 U.S.C. 103(a) over Evans et al. (US 5837661) in view of Peffly et al. (US 5972356). This rejection is respectfully traversed.

As described in the instant specification, achieving targeted deposition of a conditioning oil onto the tip regions of the hair in preference to the root regions can be problematic. While increasing the size of conditioning oil droplets can promote spreading of the oil over the surface of the hair fibers, owing to the difference in hydrophobicity between the hair tips and roots, the conditioning oil tends to deposit preferentially at the root region of hair fibers.

Other approaches at improving conditioning oil deposition include the use of a cationic deposition polymer. Employing a cationic deposition polymer results in

flocculation of the oil droplets when the hair is rinsed which, in turn, can lead to **indiscriminate deposition** of the cationic polymer, conditioning oil and other insoluble materials onto the hair.

Further complicating the problem of selective deposition from a shampoo composition is the relatively high level of cleansing surfactant present. As required by claim 1, from 10 to 50% by weight of cleansing surfactant is present in the described composition. The presence of cleansing surfactant at the relatively high levels typical of shampoos would typically be expected to dominate the surface chemistry and hydrophilicity of the conditioning oil droplets, particularly as the silicone conditioning oil is normally present in a shampoo composition in significantly lower amounts than the cleansing surfactant.

Pursuant to the subject invention it has found that **a particular silicone-polyethylene oxide block copolymer**, incorporated into a shampoo composition containing silicone conditioning oil and relatively high levels of cleansing surfactant (i.e., 10 to 50% by weight of the composition) can significantly enhance conditioning oil deposition **at hair tips, notwithstanding the relatively high levels of cleansing surfactant present.** Moreover, it has been found that such **targeted enhancement** can be achieved employing very, very low levels of this silicone-polyethylene oxide block copolymer.

The silicone-polyethylene oxide block copolymer component of the subject compositions has the formula:

$$HO\text{-}(CH_2CH_2O)_m\text{-}[Si(CH_3)_2\text{-}O\text{-}]_n(CH_2CH_2O)_mH$$

wherein m is 30 or more, n is or more and the relative amounts of m and n are such that the polymer contains a relatively high content of polyethylene oxide, i.e., 60 to 85% as set forth in the instant claims. Ethylene oxide has a molecular weight of 44 atomic mass units. The requirement that m is 30 or more means that the block copolymer contains two polyethylene oxide segments having a minimum molecular weight of 1320 atomic mass units each. The molecular weight of an $Si(CH_3)_2$-O- unit is 74 atomic mass units, giving the silicone block a minimum molecular weight of 370 atomic mass units. Thus, the minimum molecular weight of the subject silicone –polyethylene oxide block copolymer is nominally about 3000.

The subject application provides data that compares the selectivity for tip deposition of a silicone polyethylene oxide block copolymer where m is 12 and n is 13 (molecular weight 2000) to that of a silicone polyethylene-oxide block copolymer were m is 40 and n is 13 (molecular weight 4500) in a shampoo composition as described in Table 1 (16 weight % sodium laureth (2EO) sulphate, 2 weight % cocoamidopropyl betaine, 1 weight % polydimethyl siloxane (viscosity of 060,000mm^2sec^{-1}), 0.05 weight % of silicone polyethylene oxide block copolymer, 1 weight % sodium chloride and water to 100 weight%). The shampoo composition that contained the 4500 molecular weight silicone polyethylene oxide was found to provide selective deposition at hair tips (targeting score of 16%), while the composition that contained the 2000 molecular weight silicone polyethylene oxide had a targeting score of 2%, with the specification reporting that a targeting score of 5% or less is considered to be of no significant value. The improvement in selective conditioning oil deposition provided by the subject silicone polyether is significant and unexpected.

Evans et al. is directed to hair conditioning shampoo compositions that include a polyalkylene glycol of the general formula:

$H(OCH_2CHR)_n$-OH

where R is hydrogen, methyl or mixtures thereof, and n is an integer from about 1,500 to about 25,000.

There is nothing in the citation that discloses or suggests the subject silicone polyethylenene oxide block copolymers.

Peffly et al. is directed to hair styling compositions that contain silicone emulsions. The styling compositions disclosed by Peffly et al. are hair sprays, mousses, gels, lotions and the like. The organopolysiloxane emulsions are said to comprise an organopolysiloxane as dispersed particles having a diameter of less than about 140 nanometers, more generally less than about 50 nanometers. Peffly discloses that silicone emulsions having these particle sizes tend to be more stable and have better external appearance than those having larger particle sizes. See column 12, lines 1 to 22. The compositions disclosed therein contain a silicone polyether to stabilize the organopolysiloxane emulsion. Peffly et al. discloses numerous and diverse silicone polyethers in a disclosure that extends from column 17 line 15 to column 20, line 20, the bulk of which read on silicone polyethers that include both propylene oxide and ethylene oxide units. The Office Action references the disclosure of DC 193 and DC Q4-3667 as examples of silicones having a polyethylene oxide content of 67% and 63%, respectively. Peffly et al. reports that DC Q4-3667 has a molecular weight of 2400 and silicone content of 37%, from which the Office Action infers that the polymer has an ethylene oxide content of 63%. Applying these percentages to the reported molecular weight, one can reasonably conclude that DC Q4-3667, as reported by Peffly et al., fails to have the minimum number of ethylene oxides units required by the subject claims.

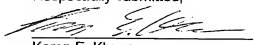
As demonstrated by the subject application **not all silicone polyethylene oxides are effective in improving the tip deposition of a silicone conditioning oil from a shampoo composition**. It is respectfully submitted that there is nothing in Peffly et al. that reasonably discloses or suggests to one skilled in the art the selection of the subject silicone polyethylene oxides. Moreover, the end-use compositions of Peffly et al. are very different from that of Evans et al. There is nothing in Peffly et al. that can be reasonably said to lead to the selection of the subject silicone polyethers as a means of improving silicone conditioning oil deposition from a shampoo composition. It is further noted that the droplet size of the silicone oil in Peffly et al. is reported as less than 150 nanometers (1 nanometer equalling 0.001 microns, 150 nanometers equals 0.15 microns), whereas the subject claims specify the insoluble silicone oil as discrete dispersed droplets of Sauter mean diameter ($D_{3,2}$) of from 2 to 100 microns. Moreover, the function of the silicone polyether in Peffly et al. is to stabilize the silicone oil-containing emulsion. It has nothing to do with providing targeted silicone conditioning oil deposition at hair tips from a shampoo composition. Accordingly, it is respectfully submitted that the incorporation of the claimed amount silicone polyethylene oxide copolymer into a hair shampoo composition containing the claimed level of silicone conditioning oil droplets and a relatively high anionic surfactant content as a means of improving the selective deposition of the oil at hair tips is in no way obvious from the disclosures of Peffly et al. and Evans et al.

In view of the foregoing amendments and remarks, reconsideration and allowance of the subject claims is respectfully requested.

Attorney Docket No.:	J3674(C)
Serial No.:	10/538,188
Filed:	June 9, 2005
Confirmation No.:	3266

If a telephone conversation would be of assistance in advancing the prosecution of the present application, applicants' undersigned attorney invites the Examiner to telephone at the number provided.

Respectfully submitted,



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